

**COLORADO DISCHARGE PERMIT SYSTEM (CDPS)  
FACT SHEET FOR PERMIT NUMBER CO0040681  
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY  
LONE TREE CREEK WATER REUSE FACILITY  
ARAPAHOE COUNTY**

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**I. TYPE OF PERMIT**

- A. Permit Type:** Domestic - Major Municipal, Mechanical Plant, Fourth Renewal
- B. Discharge To:** Surface Water

**II. FACILITY INFORMATION**

- A. SIC Code:** 4952 Sewerage Systems
- B. Facility Classification:** Class B per Section 100.5.2 of the Water and Wastewater Facility Operator Certification Requirements
- C. Facility Location:** 6250 South Uvalda Street, Centennial, CO 80111  
Latitude: 39.602286° N, Longitude: 104.830297° W
- D. Permitted Feature:** 001B, following disinfection and prior to routing to landscape irrigation or mixing with Lone Tree Creek,  
Latitude: 39° 36' 14.5" N, Longitude: 104° 50' 13.2" W
- The location(s) provided above will serve as the point(s) of compliance for this permit and are appropriate as they are located after all treatment and prior to discharge to the receiving water.
- E. Facility Flows:** 3.6 MGD

## F. Major Changes From Last Renewal:

Total recoverable iron, potentially dissolved selenium and *E. coli* limitations based upon WQBELs are new in this permit. Monitoring for temperature, nonylphenols, nitrite, sulfide, and chloride are also new. Compliance schedules for temperature equipment installation and time given to meet selenium limitations are also included with this permit.

## III. RECEIVING STREAM

### A. Waterbody Identification: *COSPC04, Lone Tree Creek*

### B. Water Quality Assessment:

An assessment of the stream standards, low flow data, and ambient stream data has been performed to determine the assimilative capacities for *Lone Tree Creek* for potential pollutants of concern. This information, which is contained in the Water Quality Assessment (WQA) for this receiving stream(s), also includes an antidegradation review, where appropriate. The Division's Permits Section has reviewed the assimilative capacities to determine the appropriate water quality-based effluent limitations as well as potential limits based on the antidegradation evaluation, where applicable. The limitations based on the assessment and other evaluations conducted as part of this fact sheet can be found in Part I.A of the permit.

Permitted Feature 001B will continue to be the authorized discharge point to the receiving stream.

## IV. FACILITY DESCRIPTION

### A. Infiltration/Inflow (I/I)

No infiltration/inflow problems have been documented in the service area.

### B. Lift Stations

Table IV-1 summarizes the information provided in the renewal application for the lift stations in the service area.

**Table IV-1 – Lift Station Summary**

Station Name/#	Firm Pump Capacity (gpm)	Peak Flows (gpd)	% Capacity (based on peak flow)
Peoria Lift Station	3 pumps for a total of 1950 gpm	648,000	23
Valley Country Club Lift Station	4 pumps for a total of 6000 gpm	1,940,000	22.5
Waterbury Lift Station	2 pumps for a total of 200 gpm	600	0.2

### C. Chemical Usage

The permittee stated in the application that they utilize eight chemicals in their treatment process. The MSDS sheets have been reviewed and the following chemicals have been approved for use and are summarized in the following table.

**Table IV-2 – Chemical Additives**

<b>Chemical Name</b>	<b>Purpose</b>	<b>Constituents of Concern</b>
Aluminum sulfate	Phosphorus Removal	Aluminum, sulfate
Sodium Hypochlorite	Disinfection	Chlorine
Sodium Hydroxide	pH Control	Sodium Hydroxide
Sulfuric Acid	pH Control	Sulfuric Acid
Sodium Bisulfite	De-chlorination	Sodium Bisulfite
Zetag 7873 Polymer	Coagulant Aid (phos. Removal)	WET testing, petroleum
Zetag 8868 Polymer	Sludge thickening, dewatering (centrifuge)	WET testing
Methoprene	Midge Fly Control	None

Chemicals deemed acceptable for use in waters that will or may be discharged to waters of the State are acceptable only when used in accordance with all state and federal regulations, and in strict accordance with the manufacturer's site-specific instructions.

#### **D. Treatment Facility, Facility Modifications and Capacities**

The facility has undergone changes that have altered the hydraulic and organic capacity. The upgraded facility consists of screening, grit removal, biological nutrient removal, clarification, phosphorus precipitation, filtration, and sodium hypochlorite disinfection. The new hydraulic capacity is 3.6 MGD and the new organic capacity is 9908 lbs BOD<sub>5</sub>/day, which are specified in Site Approval #4827. That document should be referred to for any additional information.

Pursuant to Section 100.5.2 of the Water and Wastewater Facility Operator Certification Requirements, this facility will require a Class B certified operator.

#### **E. Biosolids Treatment and Disposal**

Biosolids are dewatered, hauled, and disposed of approximately 2-3 days every other week.

##### **1. EPA General Permit**

EPA Region 8 issued a General Permit (effective October 19, 2007) for Colorado facilities whose operations generate, treat, and/or use/dispose of sewage sludge by means of land application, landfill, and surface disposal under the National Pollutant Discharge Elimination System. All Colorado facilities are required to apply for and to obtain coverage under the EPA General Permit.

2. Biosolids Regulation (Regulation No. 64, Colorado Water Quality Control Commission)

While the EPA is now the issuing agency for biosolids permits, Colorado facilities that land apply biosolids must comply with requirements of Regulation No. 64, such as the submission of annual reports as discussed later in this rationale.

**V. PERFORMANCE HISTORY**

**A. Monitoring Data**

1. Discharge Monitoring Reports – The following tables summarize the effluent data reported on the Discharge Monitoring Reports (DMRs) for the previous permit term, from January 2006 through April 2012.

**Table V-1 – Summary of DMR Data for Permitted Feature 001B**

<i>Parameter</i>	<i># Samples or Reporting Periods</i>	<i>Reported Average Concentrations Avg/Min/Max</i>	<i>Reported Maximum Concentrations Avg/Min/Max</i>	<i>Previous Avg/Max/AD Permit Limit</i>	<i>Number of Limit Excursions</i>
<i>Influent Flow (MGD)</i>	76	2.1/1.2/2.7	2.4/1.6/3.3	Report/Report	
<i>Effluent Flow (MGD)</i>	76	1.6/0.76/2.3	2.1/1.4/3.2	NA/NA	
<i>pH (su)</i>	76	7.3/6.9/7.6	7.8/7.4/8.5	6.5 - 9	
<i>Fecal Coliform (#/100 ml)</i>	76	4.3/<1/92	12/<1/292	203/406	
<i>TRC (mg/l)</i>	76	0/0/0	0.0068/0/0.3	0.012/0.021	2
<i>NH3 as N, Tot (mg/l)</i>	76	1.2/<0.1/8.4	3.3/<0.1/22	NA/NA	
<i>BOD5, influent (mg/l)</i>	76	265/144/566	343/165/845	NA/NA/	
<i>BOD5, influent (lbs/day)</i>	76	4574/1926/8700	5176/200/11119	NA/NA/	
<i>BOD5, effluent (mg/l)</i>	76	1.6/<2/4.7	2.3/<2/14	30/45/	
<i>BOD5 (% removal)</i>	76	99/97/100	NA/NA/NA	85/NA/	
<i>TSS, influent (mg/l)</i>	76	345/187/1390	470/211/2860	NA/NA/	
<i>TSS, effluent (mg/l)</i>	76	0.67/0.2/3.3	1.1/0.3/10	30/45/	
<i>TSS (% removal)</i>	76	100/99/100	NA/NA/NA	85/NA/	
<i>Oil and Grease (mg/l)</i>	76	NA/NA/NA	0/0/0	NA/10/	
<i>As, TR (µg/l)</i>	73	0.11/<1.6/2.6	0.11/<1.6/2.6	Report/Report	
<i>As, Dis (µg/l)</i>	42	0/<1.6/0	0/<1.6/0	NA/NA	
<i>Cd, Dis (µg/l)</i>	73	0.016/<0.2/1	0.016/<0.2/1	Report/Report	
<i>Cr+3, TR (µg/l)</i>	73	0/<14/0	0/<14/0	Report/Report	
<i>Cr+3, Dis (µg/l)</i>	73	0/<14/0	0/<14/0	NA/NA	
<i>Cr+6, Dis (µg/l)</i>	73	0.00023/<10/0.017	0.0002/<10/0.017	Report/Report	
<i>Cu, Dis (µg/l)</i>	73	3.8/<4/18	3.2/<4/18	Report/Report	
<i>CN, Free (µg/l)</i>	73	0.23/<5/17	0.23/<5/17	NA/NA	
<i>Fe, TR (µg/l)</i>	73	162/<80/1400	162/<80/1400	Report/Report	
<i>Pb, Dis (µg/l)</i>	73	0.12/<1/4.4	0.12/<1/4.4	Report/Report	
<i>Mn, Dis (µg/l)</i>	72	25/<2/77	25/<2/77	Report/Report	
<i>Mo, Dis (µg/l)</i>	6	3.8/<5/20	3.8/<5/20	NA/NA	
<i>Hg, Tot (µg/l)</i>	30	0.047/<0.1/0.2	0.0067/<0.1/0.2	Report/Report	
<i>Ni, Dis (µg/l)</i>	73	2/<4/15	2/<4/15	Report/Report	
<i>Se, Dis (µg/l)</i>	73	1.5/<0.8/8.2	1.5/<0.8/8.2	Report/Report	
<i>Ag, Dis (µg/l)</i>	73	0/<0.2/0	0/<0.2/0	Report/Report	
<i>Zn, Dis (µg/l)</i>	74	61/23/110	61/23/110	Report/Report	
<i>Influent Flow (MGD)</i>	76	2.1/1.2/2.7	2.4/1.6/3.3	Report/Report	
<i>30-Day Average (mg/l)</i>	76	0.033/0.017/0.068	NA/NA/NA		4
<i>Monthly (lbs/day)</i>	76	13/4.3/25	NA/NA/NA		
<i>Annual (lbs/year)</i>	32	86/8.4/159	NA/NA/NA		
<i>WET, chronic</i>					
<i>pimephales lethality, Stat Diff</i>	25	//	98/88/100	92	
<i>pimephales lethality, IC25</i>	25	//	100/100/100		
<i>ceriodaphnia lethality, Stat Diff</i>	25	//	100/100/100	92	
<i>ceriodaphnia lethality, IC25</i>	25	//	100/100/100		
<i>pimephales toxicity, Stat Diff</i>	25	//	100/100/100	Report	
<i>pimephales toxicity, IC25</i>	25	//	100/100/100		
<i>ceriodaphnia toxicity, Stat Diff</i>	25	//	98/88/100	Report	
<i>ceriodaphnia toxicity, IC25</i>	25	//	99/93/100		

\*The pH data shows the minimum reported values in the "average" column, and the maximum reported values in the "maximum column"

\*\* Geometric mean

NA means Not Applicable

2. Additional Data –The following tables summarize data collected and submitted by the permittee permittee for consideration in developing the permit limitations.

**Table V-2a – Summary of Additional Ambient Sampling Data  
from sampling location LTC #3**

<i>Parameter</i>	<i>Selenium (ug/L)</i>
1/6/2010	3.6
2/26/2010	<2.0
3/10/2010	<2.0
4/14/2010	<2.0
5/12/2010	2.4
6/18/2010	2.1
7/7/2010	1.9
8/4/2010	6.3
9/8/2010	4.6
10/6/2010	4.6
10/19/2010	4.3
11/4/2010	3.7
11/11/2010	3.3
12/7/2010	2.1
1/13/2011	35.7
2/15/2011	27.3
3/23/2011	38.7
4/28/2011	31.3
5/12/2011	1.9
6/7/2011	30.6
7/26/2011	32.4
8/11/2011	25.2
9/29/2011	29.1
10/25/2011	31.2
11/17/2011	45.1
12/13/2011	57.4
1/19/2012	34.5
2/15/2012	34.4
3/14/2012	43.8
4/16/2012	22.9
5/16/2012	25.1

**Table V-2b – Summary of Additional Ambient Sampling Data  
from sampling location LTC #3**

<i>Date</i>	<i>Temperature (degrees C)</i>	<i>pH</i>	<i>Chloride (mg/L)</i>	<i>Hardness (mg/L)</i>
10/11/2007	16.1	8.17		296
7/5/2007	24.5	8.27		284
4/3/2007	9.9	8.28		320
2/17/2007	0	7.87	560	328
10/12/2006	9.6	8.18	230	360
4/4/2006	8	8.26		348
1/10/2006	0.9	8.12		344

## **B. Compliance with Terms and Conditions of Previous Permit**

1. Effluent Limitations –The data shown in the preceding table(s) indicate apparent violations of the permit.

- Phosphorous:
  - August 2007: Monthly average exceeded due to inadequate dosing of the phosphorous control agent Sodium Aluminate.
  - September 2007: Monthly average exceeded due to inadequate dosing of the phosphorous control agent Sodium Aluminate.
  - November 2007: Monthly average exceeded due to inadequate dosing of the phosphorous control agent Sodium Aluminate; lower temperatures negatively affected the new dosing system.
  - January 2009: Monthly average exceeded, Lab analysis error cause by sample preservative contamination.
- TRC:
  - July 2008: Instantaneous maximum exceeded. Likely a mistake as subsequent tests were under the permit limitation.
  - October 2008: Instantaneous maximum exceeded due to a construction problem.

In accordance with 40 CFR Part 122.41(a), any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

2. Other Permit Requirements – The permittee has been in compliance with all other aspects of the previous permit.

## **VI. DISCUSSION OF EFFLUENT LIMITATIONS**

### **A. Regulatory Basis for Limitations**

1. Technology Based Limitations
  - a. Federal Effluent Limitation Guidelines – The Federal Effluent Limitation Guidelines for domestic wastewater treatment facilities are the secondary treatment standards. These standards

have been adopted into, and are applied out of, Regulation 62, the Regulations for Effluent Limitations.

- b. Regulation 62: Regulations for Effluent Limitations – These Regulations include effluent limitations that apply to all discharges of wastewater to State waters and are shown in Section VIII of the WQA. These regulations are applicable to the discharge from the Arapahoe County Water and Wastewater Authority WWTF.
2. Numeric Water Quality Standards - The WQA contains the evaluation of pollutants limited by water quality standards. The mass balance equation shown in Section VI of the WQA was used for most pollutants to calculate the potential water quality based effluent limitations (WQBELs),  $M_2$ , that could be discharged without causing the water quality standard to be violated. For ammonia, the AMMTOX Model was used to determine the maximum assimilative capacity of the receiving stream. A detailed discussion of the calculations for the maximum allowable concentrations for the relevant parameters of concern is provided in Section V of the Water Quality Assessment developed for this permitting action.

The maximum allowable effluent pollutant concentrations determined as part of these calculations represent the calculated effluent limits that would be protective of water quality. These are also known as the water quality-based effluent limits (WQBELs). Both acute and chronic WQBELs may be calculated based on acute and chronic standards, and these may be applied as daily maximum (acute) or 30-day average (chronic) limits.

3. Narrative Water Quality Standards - Section 31.11(1)(a)(iv) of The Basic Standards and Methodologies for Surface Waters (Regulation No. 31) includes the narrative standard that State surface waters shall be free of substances that are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.
  - a. Whole Effluent Toxicity - The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for Surface Waters. The requirements for WET testing are being implemented in accordance with Division policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010). Note that this policy has recently been updated and the permittee should refer to this document for additional information regarding WET.
4. Water Quality Regulations, Policies, and Guidance Documents
  - a. Antidegradation - Since the receiving water is Use Protected an antidegradation review is not required pursuant to Section 31.8(2)(b) of The Basic Standards and Methodologies for Surface Water.
  - b. Antibacksliding – As the receiving water is designated Use-Protected, the antibacksliding requirements in Regulation 61.10 have been met.
  - c. Determination of Total Maximum Daily Loads (TMDLs) –The receiving stream to which the



Arapahoe County Water and Wastewater Authority WWTF discharges is currently listed on the State's 303(d) list for development of TMDLs for selenium. However, the TMDL has not yet been finalized. Although this permit establishes limits for these pollutants, they do not represent the TMDLs and waste load allocations, and are therefore subject to change upon finalization of an approved TMDL for this segment.

- d. Colorado Mixing Zone Regulations – Pursuant to section 31.10 of The Basic Standards and Methodologies for Surface Water, a mixing zone determination is required for this permitting action. The Colorado Mixing Zone Implementation Guidance, dated April 2002, identifies the process for determining the meaningful limit on the area impacted by a discharge to surface water where standards may be exceeded (i.e., regulatory mixing zone). This guidance document provides for certain exclusions from further analysis under the regulation, based on site-specific conditions.

The guidance document provides a mandatory, stepwise decision-making process for determining if the permit limits will not be affected by this regulation. Exclusion, based on Extreme Mixing Ratios, may be granted if the ratio of the facility design flow to the chronic low flow (30E3) is greater than 2:1. Since the ratio of the design flow to the chronic low flow is 11:1, the permittee is eligible for an exclusion from further analysis under the regulation.

- e. Total Phosphorus – Because the discharge from this facility ultimately impacts Cherry Creek Reservoir, it is subject to the Cherry Creek Reservoir Control Regulation, Regulation 72. This regulation imposes a total phosphorus concentration limitation of 0.05 mg/l on all dischargers to the reservoir.
- f. Reasonable Potential Analysis – Using the assimilative capacities contained in the WQA, an analysis must be performed to determine whether to include the calculated assimilative capacities as WQBELs in the permit. This reasonable potential (RP) analysis is based on the Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, dated December, 2002. This guidance document utilizes both quantitative and qualitative approaches to establish RP depending on the amount of available data.

A qualitative determination of RP may be made where ancillary and/or additional treatment technologies are employed to reduce the concentrations of certain pollutants. Because it may be anticipated that the limits for a parameter could not be met without treatment, and the treatment is not coincidental to the movement of water through the facility, limits may be included to assure that treatment is maintained.

A qualitative RP determination may also be made where a federal ELG exists for a parameter, and where the results of a quantitative analysis results in no RP. As the federal ELG is typically less stringent than a limitation based on the WQBELs, if the discharge was to contain concentrations at the ELG (above the WQBEL), the discharge may cause or contribute to an exceedance of a water quality standard.

To conduct a quantitative RP analysis, a minimum of 10 effluent data points from the previous 5 years, should be used. The equations set out in the guidance for normal and lognormal distribution, where applicable, are used to calculate the maximum estimated pollutant concentration (MEPC). For data sets with non-detect values, and where at least 30% of the data set was greater than the detection level, MDLWIN software is used consistent with Division

guidance to generate the mean and standard deviation, which are then used to establish the multipliers used to calculate the MEPC. If the MDLWIN program cannot be used the Division's guidance prescribes the use of best professional judgment.

For some parameters, recent effluent data or an appropriate number of data points may not be available, or collected data may be in the wrong form (dissolved vs total) and therefore may not be available for use in conducting an RP analysis. Thus, consistent with Division procedures, monitoring will be required to collect samples to support a RP analysis and subsequent decisions for a numeric limit. A compliance schedule may be added to the permit to require the request of an RP analysis once the appropriate data have been collected.

For other parameters, effluent data may be available to conduct a quantitative analysis, and therefore an RP analysis will be conducted to determine if there is RP for the effluent discharge to cause or contribute to exceedances of ambient water quality standards. The guidance specifies that if the MEPC exceeds the maximum allowable pollutant concentration (MAPC), limits must be established and where the MEPC is greater than half the MAPC (but less than the MAPC), monitoring must be established. Table VI-1 contains the calculated MEPC compared to the corresponding MAPC, and the results of the reasonable potential evaluation, for those parameters that met the data requirements. The RP determination is discussed for each parameter in the text below.

**Table VI-1 – Reasonable Potential Analysis**

Parameter	30-Day Average			7-Day Ave or Daily Max		
	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	WQBEL (MAPC)	Reasonable Potential
Temp Daily Max (°C) March-Nov				NA	29	Monitor
Temp Daily Max (°C) Dec-Feb				NA	14	Monitor
Temp MWAT (°C) March-Nov	NA	28	Monitor			
Temp MWAT (°C) Dec-Feb	NA	14	Monitor			
<i>E. coli</i> (#/100 ml)	NA	126	Yes (Qual)	NA	252	Yes (Qual)
TRC (mg/l)	0	0.012	Yes (Qual)	0.53	0.021	Yes
Nitrate as N (mg/l)	18			18	109	No
Nitrite as N (mg/l)	NA			NA	0.05	Monitor
NH <sub>3</sub> as N, Tot (mg/l)	25	2.1	Yes	63	2.1	Yes
As, TR (µg/l)	3.9	109	No			
As, Dis (µg/l)				24	370	No
Cd, Dis (µg/l)	1.9	1.1	No	1.9	8.4	No
Cr+3, Dis (µg/l)	0	212	No	0	1634	No
Cr+6, Dis (µg/l)	10	12	No	0	17	No
Cu, Dis (µg/l)	20	27	Monitor	21	45	No
CN, Free (µg/l)				0.033	5.4	No
Fe, TR (µg/l)	1676	1000	Yes			
Pb, Dis (µg/l)	8.2	9.7	No	8.2	247	No
Mn, Dis (µg/l)	124	2658	No	124	4815	No
Hg, Tot (µg/l)	0.26	0.01	No			
Ni, Dis (µg/l)	18	153	No	18	1385	No
Se, Dis (µg/l)	9.5	4.6	Yes	9.5	18	Monitor
Ag, Dis (µg/l)	0	2.6	No	0	16	No
Zn, Dis (µg/l)	148	370	No	148	428	No
Chloride (mg/l)	NA	250	Monitor			
Sulfide as H <sub>2</sub> S (mg/l)	NA	0.0022	Monitor			
Nonylphenol (µg/l)	NA	7.2	Monitor	NA	31	Monitor

## B. Parameter Evaluation

**BOD<sub>5</sub>** - The BOD<sub>5</sub> concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. The removal percentages for BOD<sub>5</sub> also apply based on the Regulations for Effluent Limitations. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

**Total Suspended Solids** - The TSS concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. The removal percentages for TSS also apply based on the Regulations for Effluent Limitations. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

**Oil and Grease** –The oil and grease limitations from the Regulations for Effluent Limitations are applied as they are the most stringent limitations. This limitation is the same as those contained in the previous

permit and is imposed upon the effective date of this permit.

pH - This parameter is limited by the water quality standards of 6.5-9.0 s.u., as this range is more stringent than other applicable standards. This limitation is the same as that contained in the previous permit and is imposed upon the effective date of this permit.

E. coli - The limitation for E. Coli is based upon the WQBEL as described in the WQA. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter. Previous monitoring for fecal coliform as shown in Table V-1 indicate that this limitation can be met and is therefore imposed upon the effective date of the permit.

Total Residual Chlorine (TRC) - The limitation for TRC is based upon the WQBEL as described in the WQA. A qualitative determination of RP has been made as chlorine may be used in the treatment process. Previous monitoring as shown in Table V-1 indicates that this limitation can be met and is therefore imposed upon the effective date of the permit. Please note that this limitation is only in effect when the facility is using chlorination as a form of disinfection.

Ammonia - The limitation for ammonia is based upon the WQBEL as described in the WQA. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter. Previous monitoring as shown in Table V-1 indicates that these limitations can be met and are therefore effective immediately.

Nitrate - The RP analysis for nitrate was based upon the WQBEL as calculated in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time.

Nitrite - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Total Arsenic - The RP analysis for total arsenic was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Dissolved Arsenic - The RP analysis for dissolved arsenic was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Potentially Dissolved Cadmium - The RP analysis for potentially dissolved cadmium was based upon the WQBEL as calculated in the WQA. The Division examined the available data and found that out of 60 data points over the last five years, only two data points were above the detection limit. Therefore, although the Table VI-1 does show reasonable potential, the Division used a qualitative RP determination that limitations are not necessary at this time.

Potentially Dissolved Trivalent Chromium - The RP analysis for potentially dissolved trivalent chromium was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Dissolved Hexavalent Chromium - The RP analysis for dissolved hexavalent chromium was based upon

the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Potentially Dissolved Copper – The RP analysis for potentially dissolved copper was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that a 30 day average report only requirement has been added to the permit, effective immediately.

Cyanide – The RP analysis for cyanide was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Total Recoverable Iron - The RP analysis for total recoverable iron was based upon the WQBEL as described in the WQA. With the available data, the Division used a qualitative RP determination that limitations are required. Therefore a 30-day average limitation requirement has been added to the permit. Previous monitoring as shown in Table V-1 indicates that this limitation can be met and is therefore imposed upon the effective date of the permit.

Potentially Dissolved Lead - The RP analysis for potentially dissolved lead was based upon the WQBEL as calculated in the WQA. The Division examined the available data and found that out of 60 data points over the last five years, only one data point was above the detection limit. Therefore, although the Table VI-1 does show reasonable potential for a monitoring requirement, the Division used a qualitative RP determination that limitations nor monitoring are not necessary at this time.

Potentially Dissolved Manganese - The RP analysis for potentially dissolved manganese was based upon the WQBEL as calculated in the WQA. With the available data MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time.

Total Mercury - The RP analysis for total mercury was based upon the WQBEL as calculated in the WQA. Although there were effluent data available for total mercury, the detection level achieved of 0.1 ug/l were greater than the calculated WQBEL for this pollutant and were also much greater than the achievable detection levels. Consequently, the data are not considered adequate for use in quantitatively determining that there is no RP. Thus, special monitoring will be specified for this parameter in order to gather data that will enable a more accurate RP analysis to be completed.

Potentially Dissolved Nickel - The RP analysis for potentially dissolved nickel was based upon the WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Potentially Dissolved Selenium The RP analysis for potentially dissolved selenium was based upon the WQBEL as described in the WQA. With the available data, the Division used a qualitative RP determination that limitations are required. Therefore a 30-day average limitation and a daily maximum reporting requirement have been added to the permit. Based upon previous monitoring the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. A monitoring requirement has been added to the permit for the interim.

Potentially Dissolved Silver - The RP analysis for potentially dissolved silver was based upon the

WQBEL as calculated in the WQA. With the available data, the Division used a qualitative RP determination that limitations are not necessary at this time.

Potentially Dissolved Zinc - The RP analysis for potentially dissolved zinc was based upon the WQBEL as calculated in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time.

#### Temperature

The MWAT is the maximum weekly average temperature, as determined by a seven day rolling average, using at least 3 equally spaced temperature readings in a 24-hour day (at least every 8 hours for a total of at least 21 data points).

The daily maximum is defined as the maximum 2 hour average, with a minimum of 12 equally spaced measurements throughout the day. As both of these temperature requirements will likely require the use of automated temperature measurements and recordings, the permittee is given until January 31, 2013 to have the proper equipment in place to take the required readings.

As it is unknown whether the facility can meet the new temperature limitation, or whether there is reasonable potential for the facility to cause or contribute to an exceedance of the water quality standard for temperature, report only conditions will be required for the duration of this permit. Upon the next permit renewal, the collected temperature data will be used to determine if there is reasonable potential, and/or if the permittee can meet the limitation.

As continuous ambient water quality data, in accordance with the definition of the standard, is not available, the permittee is encouraged to collect instream data on a continuous basis. This data may be used during the next permit renewal, so that the assimilative capacity of the receiving water (if applicable) can be calculated and used to determine a limitation based on the streams dilution potential. If such data is not available, the Division will likely set the limitation at the water quality standard (i.e. end of pipe limit, no dilution).

Organics – The effluent is not expected or known to contain organic chemicals, and therefore, limitations for organic chemicals are not needed in this permit.

Whole Effluent Toxicity (WET) Testing – Considering this is a major domestic facility that uses a variety of chemicals in their treatment process, WET testing is required.

1. In-Stream Waste Concentration (IWC) – Where monitoring or limitations for WET are deemed appropriate by the Division, the chronic in-stream dilution is critical in determining whether acute or chronic conditions shall apply. In accordance with Division policy, for those discharges where the chronic IWC is greater than 9.1% and the receiving stream has a Class 1 Aquatic Life use or Class 2 Aquatic Life use with all of the appropriate aquatic life numeric standards, chronic conditions will normally apply. Where the chronic IWC is less than or equal to 9.1, or the stream is not classified as described above, acute conditions will normally apply. The chronic IWC is determined using the following equation:

$$\text{IWC} = [\text{Facility Flow (FF)} / (\text{Stream Chronic Low Flow (annual)} + \text{FF})] \times 100\%$$

The flows and corresponding IWC for the appropriate discharge point are:

Permitted Feature	Chronic Low Flow, 30E3 (cfs)	Facility Design Flow (cfs)	IWC, (%)
001B	0.5	5.6	92

The IWC for this permit is 92%, which represents a wastewater concentration of 92 % effluent to 8% receiving stream.

2. General Information – The permittee should read the WET testing section of Part I of the permit carefully, as this information has been updated in accordance with the Division’s updated policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010) . The permit outlines the test requirements and the required follow-up actions the permittee must take to resolve a toxicity incident. The permittee should also read the above mentioned policy which is available on the Permit Section website. The permittee should be aware that some of the conditions outlined above may be subject to change if the facility experiences a change in discharge, as outlined in Part II.A.2. of the permit. Such changes shall be reported to the Division immediately.

#### C. Parameter Speciation

For standards based upon the total and total recoverable methods of analysis, the limitations are based upon the same method as the standard.

Total Mercury: Until recently there has not been an effective method for monitoring low-level total mercury concentrations in either the receiving stream or the facility effluent. Monitoring for total mercury has been accomplished as part of past permit conditions and all but one analytical result have all been found at less than detectable levels (the single detection was at 0.2 ug/l.) However, detection levels only as low as 0.1 ug/l have been achieved, versus a total mercury limit of 0.01 ug/l.]

To ensure that adequate data are gathered to determine reasonable potential and consistent with Division initiatives for mercury, quarterly effluent monitoring for total mercury at low-level detection methods will be required by the permit.

For metals with aquatic life-based dissolved standards, effluent limits and monitoring requirements are typically based upon the potentially dissolved method of analysis, as required under Regulation 31, Basic Standards and Methodologies for Surface Water. Thus, effluent limits and/or monitoring requirements for these metals will be prescribed as the “potentially dissolved” form.

## VII. ADDITIONAL TERMS AND CONDITIONS

### A. **Monitoring**

Effluent Monitoring – Effluent monitoring will be required as shown in the permit document. Refer to the permit for locations of monitoring points. Monitoring requirements have been established in accordance with the frequencies and sample types set forth in the Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities. This policy includes the methods for reduced monitoring frequencies based upon

facility compliance as well as for considerations given in exchange for instream monitoring programs initiated by the permittee. Table VI-2 shows the results of the reduced monitoring frequency analysis for Permitted Feature 001B, based upon compliance with the previous permit.

The permittee is not eligible for reduced monitoring for new parameters, such as total recoverable iron, dissolved selenium, chloride, sulfide, or nonylphenols. Monitoring frequencies for TRC, ammonia, BOD, TSS, and oil and grease have been further reduced than that shown in Table VI-2. E. coli has been further reduced as per fecal coliform in Table VI-2.

**Table VI-2 – Monitoring Reduction Evaluation**

<i>Parameter</i>	<i>Proposed Permit Limit</i>	<i>Average of 30-Day (or Daily Max) Average Conc.</i>	<i>Standard Deviation</i>	<i>Long Term Characterization (LTC)</i>	<i>Reduction Potential</i>
<i>pH (su) Minimum</i>	<i>min 6.5</i>	7.2	0.15	6.9	<i>1 Step</i>
<i>pH (su) Maximum</i>	<i>max 9.0</i>	7.7	0.15	8	
<i>Fecal Coliform (#/100 ml)</i>	203	4.2	22	48.2	<i>3 Levels</i>
<i>TRC (mg/l)</i>	0.021	0	0	0	<i>3 Levels</i>
<i>NH3 as N, Tot (mg/l)</i>	2.1	0.12	0.17	0.46	<i>3 Levels</i>
<i>BOD5, effluent (mg/l)</i>	30	0.53	0.79	2.11	<i>3 Levels</i>
<i>TSS, effluent (mg/l)</i>	30	0.56	0.18	0.92	<i>3 Levels</i>
<i>Oil and Grease (mg/l)</i>	10	0	0	0	<i>3 Levels</i>

## **B. Reporting**

1. Discharge Monitoring Report – The Arapahoe County Water and Wastewater Authority facility must submit Discharge Monitoring Reports (DMRs) on a monthly basis to the Division. These reports should contain the required summarization of the test results for all parameters and monitoring frequencies shown in Part I.B of the permit. See the permit, Part I.B, C, and/or D for details on such submission.
2. Special Reports – Special reports are required in the event of an upset, bypass, or other noncompliance. Please refer to Part II.A. of the permit for reporting requirements. As above, submittal of these reports to the US Environmental Protection Agency Region VIII is no longer required.

## **C. Signatory and Certification Requirements**

Signatory and certification requirements for reports and submittals are discussed in Part I.D.8. of the permit.

## **D. Compliance Schedules**

The following compliance schedules are included in the permit. See Part I.B of the permit for more information.

- Selenium: Time allowed to meet selenium limitations
- Temperature: Time allowed to purchase and install temperature monitoring equipment



All information and written reports required by the following compliance schedules should be directed to the Permits Section for final review unless otherwise stated.

## **E. Stormwater**

Pursuant to 5 CCR 1002-61.3(2), wastewater treatment facilities with a design flow of 1.0 MGD or more, or that are required to have an approved pretreatment program, are specifically required to obtain stormwater discharge permit coverage, or a Stormwater No Exposure Certification, in order to discharge stormwater from their facilities to state waters. The stormwater discharge permit applicable to wastewater treatment facilities is the CDPS General Permit for Stormwater Discharges Associated with Non-Extractive Industrial Activity.

Division records indicate that the Lone Tree Creek WWTF (as "Lone Tree Creek Water Reuse Facility") applied for and obtained coverage under the CDPS General Permit for Stormwater Discharges Associated with Non-Extractive Industrial Activity (COR900000) for the Lone Tree Creek WWTF. The CDPS certification number is COR-900841.

## **F. Economic Reasonableness Evaluation**

Section 25-8-503(8) of the revised (June 1985) Colorado Water Quality Control Act required the Division to "determine whether or not any or all of the water quality standard based effluent limitations are reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons, and are in furtherance of the policies set forth in sections 25-8-192 and 25-8-104."

The Colorado Discharge Permit System Regulations, Regulation No. 61, further define this requirement under 61.11 and state: "Where economic, environmental, public health and energy impacts to the public and affected persons have been considered in the classifications and standards setting process, permits written to meet the standards may be presumed to have taken into consideration economic factors unless:

- a. A new permit is issued where the discharge was not in existence at the time of the classification and standards rulemaking, or
- b. In the case of a continuing discharge, additional information or factors have emerged that were not anticipated or considered at the time of the classification and standards rulemaking."

The evaluation for this permit shows that the Water Quality Control Commission, during their proceedings to adopt the Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, considered economic reasonableness.

Furthermore, this is not a new discharger and no new information has been presented regarding the classifications and standards. Therefore, the water quality standard-based effluent limitations of this permit are determined to be reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons and are in furtherance of the policies set forth in Sections 25-8-102 and 104. If the permittee disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, the permittee should submit all pertinent information to the Division during the public notice period.

**Lori Mulsoff**  
**July 30, 2012**

## **VIII. REFERENCES**

- A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0040681.
- B. “Design Criteria Considered in the Review of Wastewater Treatment Facilities”, Policy 96-1, Colorado Department of Public Health and Environment, Water Quality Control Commission, April 2007.
- C. Basic Standards and Methodologies for Surface Water, Regulation No. 31, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 1, 2012.
- D. Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation No. 38, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 1, 2012
- E. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 30, 2012.
- F. Regulations for Effluent Limitations, Regulation No. 62, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective July 30, 2012.
- G. Pretreatment Regulations, Regulation No. 63, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective April 01, 2007.
- H. Biosolids Regulation, Regulation No. 64, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 30, 2010.
- I. Colorado River Salinity Standards, Regulation No. 39, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective August 30, 1997.
- J. Colorado’s Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 30, 2012.
- K. Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2001.
- L. Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 23, 2002.
- M. Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2002.

- N. The Colorado Mixing Zone Implementation Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 2002.
- O. Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Domestic and Industrial Wastewater Treatment Facilities, Water Quality Control Division Policy WQP-20, May 1, 2007.
- P. Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Water Quality Control Division Policy WQP-24, March 10, 2008.
- Q. Implementing Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (WET) Testing, Colorado Department of Public Health and Environment, Water Quality Control Division Policy Permits-1, September 30, 2010.
- R. Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department of Public Health and Environment, Water Quality Control Division, Policy Number WQP-23, effective July 3, 2008.
- S. Policy for Permit Compliance Schedules, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-30, effective December 2, 2010.
- T. Procedural Regulations for Site Applications for Domestic Wastewater Treatment Works, Regulation No. 22, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective September 30, 2009.
- U. Regulation Controlling discharges to Storm Sewers, Regulation No. 65, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective May 30, 2008.
- V. Water and Wastewater Facility Operator Certification Requirements, Regulation No. 100, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective September 30, 2007.

## IX. PUBLIC NOTICE COMMENTS

The public notice period was from August 17, 2012 to September 17, 2012. Comments were received from Hatch Mott MacDonald (HMM) on behalf of Arapahoe County Water and Wastewater Authority (ACWWA). Topical summaries of the comments and the response of the Division are given below.

### Overall

**Comment 1:** In several locations, the draft permit and fact sheet reference use of UV disinfection at the Lone Tree Creek Water Reuse Facility. The facility utilizes sodium hypochlorite for disinfection. ACWWA requests that references to “UV” be removed.

**Response 1:** Change has been made as requested.

### WQA

**Comment 2:** There are several typographical errors in the Water Quality Assessment:

- a. Page 4, Paragraph 1 – Change “Cheery Creek” to “Cherry Creek”
- b. Page 12, Paragraph 7 – Change “flow” to “flows”

- c. Page 18, Paragraph 2 – Change “There was not enough not pH...” to “There was not enough pH...”
- d. Page 18, Paragraph 3 – Change “...in Table A-5” to “...in Table A-6”

**Response 2:** Changes have been made as requested.

**Fact Sheet**

**Comment 3:** Table V-1 – Summary of DMR Data for Permitted Feature 001B of the fact sheet references historical dissolved selenium concentrations of 2.3/<0.8/15 as the average/minimum/maximum from January 2006 through April 2012. This appears to include DMR records from October 2008, December 2008, January 2009, and February 2009 that were improperly reported as 15 µg/L. Revised DMRs were submitted to CDPHE in July 2012. ACWWA requests that the historical data be revised to incorporate the submitted DMR revisions.

**Response 3:** Changes have been made as requested.

**Comment 4:** Article V.B.1 of the fact sheet references apparent violations of the previous permit. The stated reason for exceeding the phosphorus limit in January of 2009 is “reason unknown.” On February 26, 2009, the attached letter was submitted with the January 2009 DMR and states that the violation was caused by preservative contamination. ACWWA requests that the reason for exceeding the monthly average phosphorus concentration in January 2009 was “Lab analysis error cause by sample preservative contamination.”

**Response 4:** Changes have been made as requested.

**Comment 5:** The Division is proposing to limit selenium in the Lone Tree Creek WRF effluent based on the sampling data from January 2010 through May 2012.

During this period, the Lone Tree Creek WRF received an industrial discharge from the water treatment facility with a high concentration of selenium from May 2010 through May 2012. The highest mass loading of selenium from this industrial discharger was from April 2011 through May 2012. The water treatment facility has since ceased discharge to the Lone Tree Creek WRF collection system. The following table is HMM’s submittal of potentially dissolved selenium data excluding the industrial discharge:

Date	Potentially Dissolved Selenium (µg/L)
1/6/2010	3.60
2/26/2010	<2.0
3/10/2010	<2.0
4/14/2010	<2.0
6/14/2012	<0.80
7/19/2012	1.00
8/16/2012	1.10

ACWWA requests that based on the removal of the known source of selenium from the collection system, the Division remove the selenium limits and continue monthly monitoring to re-evaluate the reasonable potential analysis with more appropriate data during the next permit renewal cycle.

**Response 5:** Based on the new table provided by HMM and the January 2010 estimation of 3.60 ug/l, there is reasonable potential to warrant selenium limitations. Additionally, the high ambient water quality concentrations, the potential for the water treatment plant to again send water to the WWTP, and as the permittee did not request an amendment to the permit the last time this discharge was accepted, the limit will remain in the permit so that the POTW understand the extent to which additional source of selenium can or cannot be accepted

and so that local limits can be developed under the pretreatment requirements of the permit as appropriate. No changes will be made.

**Comment 6:** On Page 13 of the Fact Sheet for Permit CO0040681, the Division notes that a reporting requirement for Potentially Dissolved Copper has been added to the permit. The permit does not appear to include a monitor requirement for Potentially Dissolved Copper.

**Response 6:** Potentially dissolved copper monitoring has been added to the permit.

**Permit**

**Comment 7:** Change “Lone Tree Creek Wastewater Treatment Facility” to “Lone Tree Creek Water Reuse Facility.”

**Response 7:** Change is made as requested in all three documents.

**Comment 8:** Total maximum annual load (TMAL) limitations for phosphorus have been incorporated in the permit. The 2010 revision of CDPHE Regulation No. 72, Cherry Creek Reservoir Control Regulation removed the TMAL language from the Regulation. ACWWA requests that reference to phosphorus loading limitation be removed from the permit, as well as the water quality assessment and fact sheet associated with the permit.

**Response 8:** Changes have been made as requested.

**Comment 9:** The Division has proposed temperature monitoring requirements for the Lone Tree Creek WRF. The draft permit includes four separate temperature monitoring line items. ACWWA requests that the four line items be consolidated into a single, year-round monitoring requirement for MWAT and Daily Maximum temperature.

**Response 9:** Reporting for Daily Maximum and MWAT for each season are separate parameters and will continue to be listed separately.